DOCUMENT RESUME

ED 176 071 CE 022 382

AUTHOR Simler, N. J.
TITLE Employment and Unemployment.
INSTITUTION Federal Reserve Bank of Minneapolis, Minn.
PUB DATE Apr 78
NOTE 31p.

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Demography; *Employment; *Employment Patterns; Employment Projections; Employment Statistics; *Employment Trends; *Labor Market; Occupational Surveys; Policy; *Unemployment

ABSTRACT

Three sections of information are presented in this report on employment and unemployment. Section 1 discusses how the concepts of employment, unemployment, and the labor force are defined and measured. Included in the discussion is an explanation of the current population survey. Section 2 examines the principal trends and cyclical movements of the past two to three decades. Topics include the following: population, labor force, participation rate; the employment rate and the employment-population ratio; disaggregation by principal age-sex groups; analysis of unemployment in the 1954 and 1975 recessions; and anatomy of unemployment in good and bad times. Finally, the third section on policies and proposals focuses upon three questions: what can be done about unemployment; what the full employment-unemployment rate is; and how long it will take to get the unemployment rate down to five percent. (JH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED176071

Employment and Unemployment

N. J. Simler
Department of Economics
University of Minnesota

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Thomas E. Kleinschmit

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Prepared for the
Ninth District Federal Reserve Bank
Minneapolis, Minnesota
April 1978

CE 022 382

Publisher's Note

Few problems confronting policymakers pose such a direct threat to individual welfare as does the problem of unemployment. For that reason, what policymakers do to reduce unemployment is a critically important subject of debate.

Regrettably, that debate often disregards such important questions as, How should we measure unemployment? What is "full" employment? How has the burden of unemployment been distributed among demographic and occupational groups?

Employment and Unemployment, by N. J. Simler, chairman of the Department of Economics at the University of Minnesota, considers these questions. While Dr. Simler's views are not necessarily those of this Bank, we are convinced that difficult problems cannot be approached without thoughtful and careful definitions of the problems. We're pleased to add Dr. Simler's report to our *Ninth District Economic Information Series* because we feel it offers some useful definitions of the unemployment problem.

Mark H. Willes
President

Table of Contents

1 INTRODUCTION

3 CONCEPTS AND MEASURES

The Current Population Survey
Who is Counted as Employed? As Unemployed? As Not in the Labor Force?
Major Definitional Issues
Changes to Come

7 TRENDS AND CYCLICAL MOVEMENTS

Population, Labor Force, and Labor Force Participation Rate
The Employment Rate and the Employment-Population Ratio
Disaggregation by Principal Age-Sex Groups
Analysis of Unemployment in the 1954 and 1975 Recessions
Anatomy of Unemployment in Good Times and Bad

17 POLICIES AND PROPOSALS

What Can Be Done About Unemployment?
What Is the Full-Employment Unemployment Rate?
How Long Will It Take to Get the Unemployment Rate Down to 5 Percent?

Introduction

For 30 years, dating from the passage of the Employment Act of 1946, it has been

> the continuing policy and responsibility of the Federal Government to use all practicable means consistent with its needs and obligations and other essential considerations of national policy, [to create and maintain], in a manner calculated to foster and promote free competitive enterprise and the general welfare, conditions under which there will be afforded useful employment opportunities, including self-employment, for those able, willing, and seeking to work, and to promote maximum employment, production, and purchasing power.

Although "maximum employment, production, and purchasing power" are mutually desirable goals—but indeed, are goals that may not be achievable simultaneously—the goal that has claimed the attention of most of us most of the time has been "full employment." This is true despite the fact that there is no general agreement on exactly what full employment means, how to achieve and maintain whatever it is or how the concepts of employment and unemployment should be defined and measured.

This attention has been magnified in recent years. First, the recession in economic activity which began late in 1973 drove the unemployment rate to postwar highs. Then, the subsequent recovery of output and employment, which began early in 1975, has not proved strong enough thus far to reduce unemployment to pre-recession levels.

To clarify our understanding of unemployment, this report will address the following questions:

- How are the concepts of employment, unemployment, and the labor force defined and measured?
- What have been the principal trends and movements in these variables in the past two or three decades?
- What can be done to make the goal of full employment a reality?

Concepts and Measures

The Current Population Survey

Each month about 1,000 specially trained interviewers for the Bureau of the Census fan out across the country to survey a scientifically selected sample of approximately 47,000 households in over 460 areas of the United States. These interviews provide information on labor market activities (during the week preceding the survey) of all civilian members of households—those who are at least 16 years of age and who are not confined to institutions (such as jails, asylums, or hospitals). This information is processed by the Bureau of Labor Statistics (BLS) and then made public early in the following month.

The household survey is designed so that each person (civilian, noninstitutional) of working age is classified either as employed, as unemployed, or as not in the labor force. The sample data obtained from the households are "weighted up" (assigned weights) to arrive at estimates of the total number of persons employed, unemployed, or not in the labor force for the nation as a whole. The various categories of persons are defined as follows:

"Civilian, noninstitutional population of working age"—the number of persons in the labor force *plus* the number classified as not in the labor force. (Using symbols, this could be expressed as CP = LF + NLF.)

"Civilian labor force"—consists of persons employed *plus* the number unemployed (CLF = CE + U).

"Labor force participation rate"—*equals* the civilian labor force *divided by* the civilian noninstitutional population of working age (LFPR = $\frac{CLF}{CP}$).

"Civilian unemployment rate"—*equals* the number of persons unemployed *divided by* the civilian labor force (UR = $\frac{U}{CLF}$).

"Employment-population ratio"—*equals* the number of persons employed *divided by* the civilian noninstitutional population of working age (EPR = $\frac{CE}{CP}$).

Each household in the sample represents about 1,500 households in the country. Thus, a total of 7.5 million unemployed would be represented by about 5,000 persons in the survey. Although this may appear to be an extremely small sample on which to base our national estimates of employment and unemployment, it is the largest of its kind in the world and is a substantially larger sample than any used in national public opinion polls.

Since the estimates are based on only a statistical sample of all the households in the country, users of the published statistics must take this into account when evaluating the figures. For instance, on an estimate that there are currently 7.5 million unemployed persons, the statistical sampling error is about 105,000, plus or minus. Statistically, this means that if a 100 percent census of households were taken, the chances are two out of three that the actual count of the total number of unemployed persons would fall between 7.395 and 7.605 million, and nine changes out of ten that it would lie between 7.332 and 7.668 million. By the same statistical analysis reasoning, if the current level of unemployment is estimated to be 7.5 million, a change in that level from one month to the next would have to exceed 168,000 before the BLS would consider it to be statistically significant (nine chances out of 10). Similarly, if

an unemployment level of 7.5 million implied an unemployment rate of 8 percent, it would have to rise to at least 8.2 percent or fall to at least 7.8 percent before we could say that the month-to-month change in the unemployment rate was statistically significant.

The monthly household survey not only provides estimates of total employment and unemployment, but its relatively large sample size also permits the data to be broken down into fairly detailed demographic, occupational, and industrial components. Thus, separate unemployment rates can be estimated for: adults and teenagers, men and women, whites and blacks, married and single workers, white-collar and blue-collar workers, farm and nonfarm workers, workers in government, workers in private industry (such as construction, manufacturing, services and wholesale and retail trade) and full-time and part-time workers.

However, the finer the breakdown, the smaller the sample size and the greater the degree of sampling error. Thus, the unemployment rate for teenagers (there are only about 9 million in the labor force) has a higher sampling error. For a 20 percent unemployment rate, the month-to-month change must be at least 1 percentage point on either side (19 or 21 percent) to be significant. Similarly, the unemployment rate for female black teenagers (there are less than 450,000 in the labor force) has an even higher sampling error. The significant limits are on the order of 4 percentage points on either side of an unemployment rate of 40 percent.

Who is Counted as Employed? As Unemployed? As Not in the Labor Force?

People are counted *employed* if, during the survey week (the week immediately preceding the interview), they: (a) worked at least one hour either as paid employees or in their own profession, business, or farm; or (b) if they worked at least 15 hours as unpaid workers in a family enterprise. People are also counted as employed if they had a job or a business but were not at work because of illness, bad weather, vacation, a labor dispute, or because of personal reasons. According to this definition, there were 84,783,000 persons employed during the recession year of 1975.

Unemployed persons are defined as those who (a) did not work at all during the survey week, but who (b) actively looked for work during the previous four weeks, and who (c) were currently available for work.

Actively looking for work means actively searching for a job in any of the following ways: registering at a public or private employment office; being on a union or professional job register; asking friends or relatives about possible job opportunities; placing or answering advertisements; writing letters of application or filling out application forms at personnel offices; or interviewing with prospective employers.

People are also counted as unemployed, even though they are not actively searching for a job, if they are waiting to report to a new job within the next 30 days or to be recalled from a temporary layoff. In 1975, there were 7,830,000 unemployed persons. Thus, since the 1975 civilian labor force was 92,613,000, the civilian unemployment rate was 8.5 percent ($UR = \frac{U}{CLF}$).

Persons who are under 16 years of age, and all those who are confined to jails, asylums, hospitals, and the like are excluded from the count of the employed, the unemployed, and the labor force. All other persons comprising the civilian noninstitutional population (CP) are eligible to participate in the civilian labor force (CLF). Many choose not to do so. Therefore, persons who are neither employed nor actively seeking employment are counted as ***not in the labor force***. In 1975, almost 39 percent of the civilian noninstitutional population, or 58,656,000 persons, were classified as not in the labor force. For most of these, family responsibilities precluded participation. For most of the rest, going to school, ill health, or advanced age (retirement) prevented jobholding or jobseeking activities. Persons over age 65 are counted as part of the labor force if they are employed or looking for employment.

In addition, some persons classified as not in the labor force are considered "discouraged workers." In 1975, 1,082,000 persons reported themselves as currently available for employment but as not actively seeking work recently because of one or more of the following reasons: they thought no jobs were available in their line of work or area; they had tried unsuccessfully to find work; they lacked the necessary schooling, training, experience, or skills;

they felt employers considered them too young or too old; or they had some other personal handicap in finding work. Such "discouraged workers" represent persons who want a job but who have not actively looked for work within the past four weeks. Such persons are not counted as either unemployed or in the labor force because they do not meet the test of being currently active jobseekers. If they had been included in the unemployment (and labor force) count for 1975, the civilian unemployment rate would have been 9.5 percent instead of the reported 8.5 percent.

Major Issues of Definition

The monthly household (labor force) survey was established in 1940. Its purpose has been to obtain precise, consistent measures of employment, unemployment and the labor force. While the sample size has been increased and the techniques of data collection and processing have been improved, the basic methods and definitions used in the survey remain essentially unchanged. There have been a few conceptual changes, however.

In 1957, the definition of unemployment was broadened to include persons on temporary layoff or waiting to begin a new job within 30 days. In 1967, the minimum age for labor force participation was raised from 14 to 16 years of age. At the same time, the concept of unemployment was narrowed to exclude persons not currently available for work or not actively searching for work, and employment was broadened to include persons who had a job but were not at work because of illness, bad weather, strikes, and so forth. (In each case, the historical series were revised back to January 1947 to reflect the changes made.)

At the present time, there remain several other conceptual issues. One of these concerns the intensity and seriousness with which unemployed persons look for work. Some critics have asserted that the unemployment count is exaggerated by including people whose job search activities are casual, who do not really want a job. Thus far, no feasible way has been found to measure objectively such things as intensity and seriousness. Without objective measures and standards, the Bureau of Labor Statistics would simply be imposing its value judgments on the unemployed.

A second issue stems from the fact that our employment and unemployment statistics are just body counts: those working part-time by choice and those employed part-time involuntary are counted equally as employed—just as full-time students and others searching for part-time employment are counted as unemployed on the same basis as heads of households looking for full-time work. However, the BLS does report separately the numbers of full-time and part-time jobholders and jobseekers, thereby permitting a variety of alternative unemployment rates to be calculated and compared with the official unemployment rate. The official unemployment measure was 8.5 percent in 1975. But this compares with rates for other definitions as follows:

- 5.8% - Unemployed household heads as a percent of the (household head) labor force.
- 8.1% - Unemployed persons seeking full-time work as a percent of the full-time labor force (including those employed part-time involuntarily).
- 10.3% - Unemployed persons seeking full-time work, plus (a) one-half of the unemployed persons seeking part-time work and (b) one-half of those employed part-time involuntarily—as a percent of the civilian labor force, minus (c) one-half of the part-time labor force. (Both part-time workers seeking full-time work and unemployed persons seeking only part-time work are here counted as part-time unemployed.)
- 9.1% - "Labor force time lost" (total hours of work lost by the unemployed and persons employed part-time involuntarily as a percent of total labor force hours potentially available).

Each of these alternative measures is regularly published by the BLS.

Another issue concerns the treatment of those jobless persons who are available for work but who are not currently looking for a job because they believe none is available for them. Since 1967, the BLS has excluded jobless persons from the unemployment count unless they had taken some specific action to look for work

within the four weeks preceding the interview." At the same time, the discouraged worker concept was broadened to include more reasons for discouragement than simply a person's belief that his/her area of work was devoid of jobs. In addition, the interview schedule was expanded to isolate the reasons why people are not in the labor force, their recent work history, and their intentions to look for work within the next year. As a result of these changes, the BLS is now able to report, on a quarterly basis, the count of discouraged workers separately from the unemployed. This permits the construction of two more alternative unemployment rates:

- Total unemployed persons plus discouraged workers—as a percent of the civilian labor force plus discouraged workers. In 1975, this was 9.5 percent.
- Unemployed persons seeking full-time work plus one-half of the unemployed persons seeking part-time work and one-half of those employed part-time involuntarily plus discouraged workers—as a percent of the civilian labor force minus one-half of the part-time labor force plus discouraged workers. In 1975, this was 11.5 percent.

A fourth issue is whether the unemployment measures should include an index of employment and earnings "inadequacy." The basic idea is that many of the unemployed are not really in need while many of those who have jobs are. In addition, persons who have simply dropped out of the labor force represent varying degrees of earnings inadequacy and economic need.

Although the unemployment rate may serve very well as an indicator of current economic conditions and the gap between potential and actual output, it is not a very good measure of economic hardship. For this, what is needed is a measure of the proportion of people working, looking for work, or discouraged from seeking work who are not able to earn some agreed-upon minimum income, and who do not have other working family members or other sources of income to make up the difference. The regular monthly household survey simply is not capable of generating the needed earnings and income data for such a measure. Earnings data are available only once a year from a special supplement to the survey, and data on nonlabor income are not available at all. As a result, an index of employment and earnings inadequacy can only be constructed once a year.

Changes to Come

The changes in the concepts of employment and unemployment introduced in 1967 were based on recommendations made by the President's Committee to Appraise Employment and Unemployment Statistics, a study commission that had been appointed by President Kennedy late in 1961. Although there have been no further revisions since 1967, some additional changes can be expected. Legislation passed by Congress in the fall of 1976 gave the President a mandate to establish a National Commission on Employment and Unemployment Statistics with broad authority to assess the official statistics and to recommend conceptual changes.

Trends and Cyclical Movements

Since World War II, the United States has experienced six recessions, the worst one of which began late in 1973 and ended early in 1975. The gross national product (measured in 1972 dollars) dropped from $1,241 billion in the fourth quarter of 1973 (1973-IV) to $1,159 billion in the first quarter of 1975 (1975-I)— a decrease of 6.6 percent in only a year and a half. Between 1973-IV and 1975-II, the labor force increased from 89.8 million to 92.5 million, employment fell from 85.6 million to 84.3 million; unemployment rose from 4.3 million to 8.2 million, causing the unemployment rate to increase from 4.7 percent to 8.9 percent.

To put these changes in historical perspective, Table 1 shows the cyclical low and high unemployment rates for the postwar period. The lowest unemployment rate (2.6 percent) occurred at the peak of the Korean War-induced expansion in 1953, and the highest rate (8.9 percent) was in 1975 at the trough of the recent recession. The cyclical lows average 3.9 percent (4.3 percent, if war periods 1953-II and 1969-II are excluded) and tend to increase over time. The cyclical highs average 7.0 percent and also tend to be rising.

Table 1
Cyclical trends in the unemployment rate since 1948

Date	Cyclical Low (%)	Cyclical High (%)
1948-II	3.7	
1949-IV		7.0
1953-II	2.6	
1954-III		6.0
1957-I	4.0	
1958-II		7.4
1960-I	5.1	
1961-II		7.0
1969-II	3.4	
1971-I		6.0
1973-IV	4.7	
1975-II		8.9

Source: U.S. Department of Labor

The upward creep of the nation's unemployment rate is confirmed by the data graphed in Figure 1. There the unemployment rate is plotted for each quarter between 1948 and 1977. The 30-year average is about 5.1 percent. A linear trend line fitted to these data begins at about 4.1 percent in 1948 and ends at approximately 5.9 percent in 1977, an increase of 1.8 percentage points in 30 years. However, the unemployment rate reached a cyclical low in 1948, and 1977 was only two years after a cyclical high. When a trough-to-trough trend line is fitted from 1949 to 1975, the 27-year average is 5.0 percent; the trend line begins at about 4.4 percent in 1949 and ends at approximately 5.6 percent in 1975, an increase of 1.2 percentage points in 27 years. It is clear that, after eliminating the cyclical ups and downs, the nation has experienced a slowly rising unemployment rate in the period following World War II.

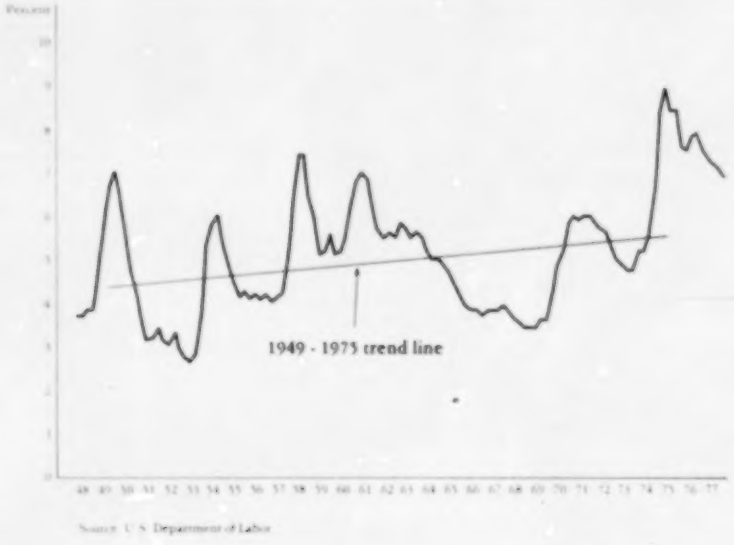
Population, Labor Force, and Labor Force Participation Rate

Between 1949 and 1975 the working age population increased from 105.6 million to 153.4 million—over 45 percent, or at an average annual rate of 1.45 percent. But the labor force grew even faster: it increased by over 51 percent, from 61.3 million to 92.6 million, or at an average annual rate of 1.6 percent. As a result, the labor force participation rate rose from 58.0 percent in 1949 to 60.4 percent in 1975. Most of the increase in the participation rate took place in the latter half of the postwar period. Although it fluctuated between 57.0 percent and 58.5 percent, there was no apparent trend in the participation rate between the late 1940s and the early 1960s. From 1963 to 1975, however, it increased steadily from 57.4 percent to 60.4 percent. By 1977 it had reached 61.4 percent.

These changes reflect accelerated growth of the labor force relative to population in the latter part of the postwar period. The middle graph in Figure 2, together with the data presented in Table 2, summarizes these developments.

The years shown in Table 2 are all recession years, so the comparative growth rates are all on a trough-to-trough basis. Both the population and the labor force have been increasing at an increasing rate, but the acceleration in labor

Figure 1:
The National Unemployment Rate, 1948 - 1977



Source: U.S. Department of Labor

force growth has been greater than that in population growth. Thus, the labor force participation rate has increased. As we shall see, the most significant factors behind these trends are the rapid increases in the labor force participation of women and in the population of teenagers and young adults.

The Employment Rate and the Employment-Population Ratio

The top graph in Figure 2 shows the employment rate. It is derived by dividing total employment by the labor force ($\frac{CE}{CLF}$) or, more simply, by subtracting the unemployment rate from unity. It reflects the unemployment rate and measures employment as a percentage of all persons working or looking for work. The bottom graph shows the employment-population ratio. It is derived by dividing total employment by the population of working age ($\frac{CE}{CP}$), or, alternatively, by multiplying the employment rate by the labor force participation rate ($\frac{CE}{CLF} \times \frac{CLF}{CP}$). Thus, it measures employment as a percentage of all persons available for work in the broadest sense of the term.

Since the rise in the participation rate has been slightly more pronounced than the downtrend in the employment rate, the employment-population ratio has tended to increase, especially in the last 15 years. A linear trend line fitted to the data for the last half of the postwar period begins at 54.3 percent in 1961 and ends at 56.7 percent in 1975, an increase of 2.4 percentage points in 15 years. Over the same period, the participation rate increased by 3.1 percentage points, from 57.0 percent to 60.1 percent, and the employment rate decreased by one-half percentage point, from 95.1 percent to 94.6 percent. This means that despite the tendency for a larger fraction of the labor force to be unemployed, there has been a stronger trend for a larger fraction of the working-age population to be employed.

During the first half of the postwar period (1949-1961), roughly speaking, the participation rate and the employment rate tended to move together. The second half (1961-1975) has been marked by a steady increase in the participation rate notwithstanding the ups and downs of the employment rate. Whereas the level of employment declined in the 1949, 1954, and 1958 recessions, it increased during the

Table 2
Working-age population and the labor force
in selected years since 1949

	1949	1954	1958	1961	1970	1975
Population (millions)	105.6	111.7	116.4	121.3	140.2	153.4
Growth rate to 1975 (% per year)	1.45	1.55	1.65	1.70	1.85	—
Labor force (millions)	61.3	63.6	67.6	70.5	82.7	92.6
Growth rate to 1975 (% per year)	1.60	1.75	1.90	2.10	2.40	—
Labor force participation rate (%)	58.0	57.0	58.1	58.1	59.0	60.4

Source: U.S. Department of Labor

second half of the period in every year except 1975. Consequently, the employment-population ratio not only has displayed a marked upward trend since 1961 but also has exhibited smaller fluctuations than the employment (or unemployment) rate. Because the employment-population ratio has a more stable base than either the employment or unemployment rate, some analysts believe it provides a better measure of labor market conditions than the latter. On the average, an increasing percentage of the total number of people available for work has been employed—at the same time that an increasing percentage of the labor force has been unemployed.

Disaggregation by Principal Age-Sex Groups

The preceding discussion has focused on postwar trends in the working-age population, the labor force, the labor force participation rate, the unemployment (employment) rate, and the employment-population ratio. These overall measures conceal a good deal of diversity among the several demographic groups that make up the total. For instance, the total working-age population increased by 45 percent between 1949 and 1975, but the teenage population grew twice as fast, by 91 percent. The population of young adults (age 20-24) grew by almost 65 percent, or almost half again as fast as the total. Conversely, the adult population increased relatively slowly, by only 37 percent

Figure 2:
Labor Market Variables, 1949 - 1975

Source: U.S. Department of Labor

12

over the period. In 1949, teenagers comprised 8.1 percent of the working-age population, young adults 10.9 percent, and adults 81 percent. By 1975, the teenage and young adult shares had risen to 10.8 percent and 12.4 percent, respectively, and the adult share had fallen to 76.8 percent.

These changes in the age composition of the population, together with changes in age-specific labor force participation rates, induced substantial shifts in the age composition of the labor force. Teenagers constituted about 7 percent of the labor force in 1949, but 9.5 percent in 1975. Young adults accounted for under 12.5 percent of the labor force in 1949, but 14.5 percent in 1975. Taken together, young people between the ages of 16 and 24 comprised just under one-fifth of the labor force in 1949, but almost one-quarter in 1975. Correspondingly, the adult share of the labor force fell from about four-fifths to approximately three-quarters between 1949 and 1975.

Changes in the sex composition of the labor force have been even more dramatic. In 1949, 71 percent of the labor force was male and 29 percent female. By 1975, males comprised only 60 percent while the female share had risen to 40 percent. Since the male and female populations grew at roughly the same rate, all of the change in sex composition of the labor force was accounted for by differential changes in the participation rate of men and women. Between 1949 and 1975, the female participation rate increased steadily from about 33 percent to between 46 and 47 percent, while the male rate decreased from 87 percent to between 78 and 79 percent.

The fall in the male participation rate was due principally to the decline in labor force participation among older white males and among nonwhites in all age brackets. Although the rise in the female participation rate was spread across all working-age brackets, it was concentrated among married women, whose participation rate doubled over the period.

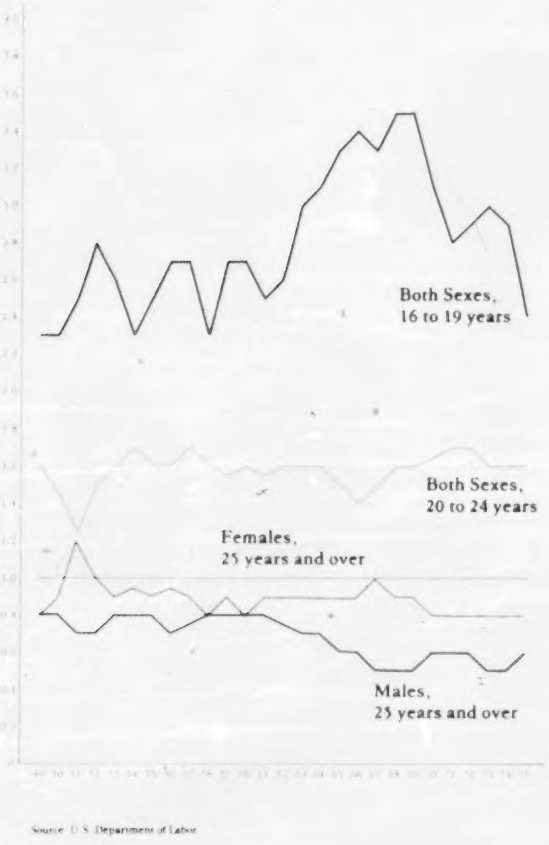
Throughout the postwar period teenage unemployment rates have been higher than those of any other age group. (See Figure 3.) Except for three years during the Korean War, 1951 to 1953, the unemployment rate among teenagers was at the double-digit level, ranging from 11

Figure 3:
Selected Unemployment Rates, 1949 - 1975

Source: U.S. Department of Labor

percent to 20 percent. The teenage unemployment rate averaged about 2.5 times as high as the overall rate between 1949 and 1961, and 3 times as high in the period between 1961 and 1975. (See Figure 4.) Moreover, the ratio of the teenage unemployment rate to the overall unemployment rate tended to be high or increasing when the overall rate was low or falling. For example, during the prolonged expansion in economic activity from 1961 to 1969, when the overall rate declined from 6.7 percent to 3.5 percent and the teenage rate fell from 16.8 percent to 12.2 percent, the ratio of the teenage

Figure 4:
Ratios of Selected Unemployment Rates to the National Unemployment Rate, 1949 - 1975



Source: U.S. Department of Labor

rate to the overall rate rose from 2.5 to 3.5—meaning that the unemployment rate among teenagers fell more slowly than the overall rate.

Conversely, the ratio of the teenage rate to the overall rate tended to be low or decreasing when the overall rate was high or rising. For instance, in 1975 when the overall rate reached its postwar peak of 8.5 percent and the teenage rate rose to almost 20 percent, the ratio of the two fell to 2.4—the same as it had been in the recession years of 1949, 1954, and 1958 and lower than it had been in 1961 and 1970.

The ratio of the teenage unemployment rate to the overall unemployment rate is just the ratio of the teenage share of total unemployment to the teenage share of the labor force. Thus, the behavior of this ratio implies that in the postwar period teenage unemployment has increased a good deal faster than the teenage labor force, that teenagers have a disproportionately large share of total unemployment, and that teenage unemployment has been both relatively slower to fall and relatively slower to rise than unemployment generally.

The unemployment rate among young adults (ages 20-24), although high in comparison with the overall unemployment rate, has been considerably lower than the teenage rate. In only three recession years—1958, 1961, and 1975—did the young adult unemployment rate reach the double-digit level. In all other years it ranged from under 10 percent to just over 4 percent. (See Figure 3.) At the same time the young adult rate has been very highly correlated with the overall rate, moving up and down in virtually the same proportion as the changes in the latter. This is shown in Figure 4. The ratio of the young adult rate to the overall rate averaged close to 1.6 over the postwar period and, especially after the Korean War, tended to fluctuate in a relatively narrow range around that figure. This means that the young adult share of total unemployment has increased in just about the same proportion as the fraction of young adults in the labor force.

With regard to male and female unemployment, the data show that the unemployment rate among women has been consistently higher than that among men. Moreover, the spread between the two has been increasing. Between 1949 and 1961, the female unemployment rate averaged 17 percent higher than the male rate. During the long expansion in economic activity from 1961 to 1969, the ratio of the female rate to the male rate increased from 1.1 to 1.7—meaning that the unemployment rate among women declined more slowly than that among men. Although this trend was reversed during the 1970s, the female unemployment rate nevertheless averaged 39 percent higher than the male rate for the 1961-1975 period as a whole—42 percent higher in the 1960s and 34 percent higher in the 1970s. Throughout the postwar period, the female-male unemploy-

ment rate ratio tended to be high or increasing when the overall unemployment rate was low or falling, and to be low or decreasing when the overall rate was high or rising. This means that female unemployment has been relatively slow to decline when the economy expanded but also relatively slow to rise when it contracted.

A closer analysis reveals, however, that this pattern of unemployment is almost entirely a function of age rather than sex. If female teenagers and young adults are excluded and only adult women are considered, a different pattern emerges. The ratio of the adult female unemployment rate to the overall rate is shown in the third line of Figure 4. Except for a rather sharp fluctuation during the Korean War period, the ratio has changed very little. It has averaged close to 0.9—meaning not only that the fraction of total unemployment accounted for by adult women has been less than the fraction of adult women in the labor force but also that it has not increased despite the growing percentage of adult women in the labor force. (Between 1949 and 1975, the portion of the labor force accounted for by adult women increased from 22 percent to 29 percent.) In fact, it has decreased slightly. Between 1949 and 1961, the adult female unemployment rate averaged 4.4 percent and the overall rate averaged 4.9 percent yielding a ratio of 0.91; between 1961 and 1975, the two unemployment rates were 4.5 percent and 5.2 percent, respectively, and the ratio declined to 0.86.

Adult male unemployment rates have been consistently the lowest of any of the major age-sex groups. The postwar average was only 3.4 percent. Moreover, the unemployment rate among adult males, unlike that of the other age-sex groups, has decreased over the period. Between 1949 and 1961, it averaged 3.8 percent; between 1961 and 1975, 3.2 percent. The highest it ever got was 5.6 percent in the 1958 recession (even during the 1975 recession, which was worse, it reached only 5.5 percent), and it fell to a low of 1.7 percent in 1969 at the end of the long expansion of the 1960s. In addition, as the bottom line of Figure 4 shows, the ratio of the adult male unemployment rate to the overall unemployment rate, after holding steady at about 0.75 in the first half of the postwar period, has been generally falling since 1961. The interpretation is not only that the share of adult male unemployment in total unemployment has been consistently less than the adult male share of the labor force but also that since 1961 the adult male unemployment share has been decreasing faster than the fraction of adult males in the labor force. Between 1961 and 1975, their unemployment share fell from 44 percent to 30 percent while their labor force share declined from 56 percent to 47 percent.

Finally, as we noted earlier, the overall employment-population ratio averaged 55.0 percent and displayed no particular trend during the first half of the postwar period; it increased slightly to an average of over 55.5 percent in the second half and showed a moderate upward trend. But the behavior of the overall ratio was the result of largely offsetting changes in its age-sex components. The employment-population ratio for adult men (here meaning 20 years of age and over) moved gradually downward over the postwar period, from a level close to 85 percent at the beginning to roughly 75 percent at the end—reflecting the steady decline of the group's labor force participation rate. Conversely, the ratio for adult women (20 years and over) rose sharply over the same period, from below 30 percent to over 40 percent—mirroring the rapid rise in their labor force participation rate. During the same time, the ratio for teenagers moved erratically downward from about 45 percent to around 35 percent in the mid-1960s, and fluctuated around a level of 40 percent thereafter.

Unemployment in the 1954 and 1975 Recessions

These pronounced changes in the age-sex composition of employment, unemployment, and the labor force during the postwar period have had a substantial effect on the nation's unemployment rate. The magnitude and direction of this effect can be shown with the data presented in Table 3. The table contains various unemployment and labor force statistics by major age-sex groups for 1954, along with comparable 1975 values of these data. In addition to the number of persons unemployed and in the labor force, the table shows the age-sex specific unemployment rate, share of unemployment, share of the labor force, and the ratio of these two shares. The latter may be interpreted as a

Table 3
Unemployment and the labor force, 1954 and 1975

	Unemployment (000)	Labor Force (000)	Unemployment Rate (Percent)	Share of Unemployment (Percent)*	Share of Labor Force (Percent)*	Relative Incidence of Unemployment
1954						
Both sexes, 16 to 19 years	501	3,979	12.6	14.2	6.2	2.3
Both sexes, 20 to 24 years	504	5,476	9.2	14.3	8.6	1.7
Females, 25 years and over	821	15,572	5.3	23.2	24.5	0.9
Males, 25 years and over	1,706	38,616	4.4	48.3	60.7	0.8
TOTAL	3,532	63,643	5.5	100.0	100.0	
1975						
Both sexes, 16 to 19 years	1,752	8,799	19.9	22.4	9.5	2.4
Both sexes, 20 to 24 years	1,828	13,467	13.6	23.4	14.5	1.6
Females, 25 years and over	1,880	26,890	7.0	24.0	29.0	0.8
Males, 25 years and over	2,370	43,457	5.5	30.3	46.9	0.6
TOTAL	7,830	92,613	8.5	100.0	100.0	

*Totals may not add to 100 percent due to rounding

Source: U.S. Department of Labor

measure of the relative incidence of unemployment: A ratio greater than one says that the group's share of unemployment exceeds its share of the labor force and means that the group bears a disproportionately heavy burden of the nation's unemployment; a ratio less than one means that the converse is true.

The data show that the distribution of the burden of unemployment during recessions has not changed very much between 1954 and 1975 despite the large shift in the structure of the labor force. The teenage and young adult shares of unemployment have increased in just about the same proportion as their labor force shares; the share of unemployment of adult women has risen somewhat less than their share of the labor force; and the adult male unemployment share has decreased somewhat more than their labor force share.

The table reveals that the groups with the highest unemployment rates (teenagers, young adults, and adult women) were also the groups whose share of the labor force increased between 1954 and 1975, and that the group with the lowest unemployment rate (adult men) was also the group whose labor force share decreased. This means that part of the rise in the overall unemployment rate from 5.5 percent in 1954 to 8.5 percent in 1975 can be attributed simply to the change in the composition of the labor force. Suppose the structure of the labor force in 1975 had been the same as it was in 1954. Then, if the 1975 age-sex specific unemployment rates were applied to the 1954 labor force shares, the 1975 overall unemployment rate would have been 7.4 percent instead of 8.5 percent. In other words, changes in the structure of the labor force accounted for 1.1 percentage points, or over one-third, of the 3 percentage points increase in the unemployment rate between the two years.

We can also compute what the 1954 unemployment rate would have been if the structure of the labor force in 1954 had been the same as it was in 1975. If the 1954 age-sex specific unemployment rates were applied to the 1975 labor force shares, the 1954 overall unemployment rate would have been 6.1 percent instead of 5.5

percent. Either way, a substantial part of the increase in the nation's unemployment rate in the postwar period can be accounted for by the fact that the age-sex groups with the highest unemployment rates have made up steadily increasing fractions of the labor force.

The effects of this phenomenon will gradually diminish with the passage of time. The birth rate has been declining since 1957, and persons born in that year are already adults. Assuming no great changes in their labor force participation rates, teenagers and young adults will account for smaller and smaller fractions of the labor force from now on. The latest projections of the Bureau of Labor Statistics suggest that the teenage and young adult shares of the labor force will fall below 7 percent and 12 percent, respectively, by 1990. Correspondingly, the shares of adult men and women are projected to rise to 48 percent and 34 percent, respectively. So, even if the age-sex specific unemployment rates in 1990 are as high as they were in 1975, the 1990 overall unemployment rate would be 7.9 percent instead of 8.5 percent. This suggests that, barring an unforeseen deterioration in the underlying state of the economy, the long upward creep in the nation's unemployment rate has come to an end—indeed, has already begun to reverse itself.

Unemployment in Good Times and Bad

The structure of unemployment at the peak of a business cycle is quite different from what it is at the bottom of a recession. The following data relate to 1969 when the unemployment rate was only 3.5 percent, and to 1975 when it reached a postwar high of 8.5 percent. Table 4 shows the percent distribution of unemployment in both years by various categories. Panel A shows that persons who were laid off or otherwise lost their jobs constituted well over one-half of the unem-

Table 4
Percent distribution of the unemployed, 1969 and 1975*

	1969	1975
Panel A — *By reason for unemployment*		
Layoffs	35.9	55.4
Quits	15.4	10.4
Re-entrants	34.1	23.8
New entrants	14.6	10.4
TOTAL	100.0	100.0
Panel B — *By duration of unemployment*		
Less than 5 weeks	57.5	37.0
5 to 14 weeks	29.3	31.3
15 to 26 weeks	8.5	16.5
27 weeks and over	4.7	15.2
TOTAL	100.0	100.0
Average duration (in weeks)	7.9	14.1
Panel C — *By major occupational groups*		
White-collar workers	27.6	26.8
Blue-collar workers	40.8	47.4
Service workers	14.8	13.9
Farm workers	2.2	1.4
Workers with no previous experience	14.6	10.4
TOTAL	100.0	100.0

*Totals may not add to 100 percent due to rounding.

Source: U.S. Department of Labor

ployed when unemployment was high but just over one-third when it was low. On the other hand, persons who in some sense had become unemployed through their own volition—those who quit their jobs, or who re-entered the market to look for work after having been out of the labor force for some time, or who entered the labor force for the first time and therefore had no previous work experience—made up almost two-thirds of the unemployed in good times but well under one-half in bad times.

Panel B tells the other part of the story: The average length of time a person remained unemployed was much greater when the unemployment rate was high than when it was low. The average spell of unemployment lasted less than eight weeks in 1969, but extended to over 14 weeks in 1975. In 1969, almost 87 percent of the unemployed were recalled to work or found new jobs within a period of about three months, but only 68 percent were that fortunate in 1975. Moreover, less than 5 percent of the unemployed (133,000 persons) in 1969 were out of work for more than half a year, but in 1975 over 15 percent (1.2 million persons) were. Long-term unemployment breeds discouragement; the number of "discouraged workers" (those who had given up an active search for work) was almost twice as large in 1975 (1.1 million persons) as it was in 1969 (574,000 persons).

Panel C shows the distribution of unemployment by major occupational groups. The share of blue-collar workers (craftsmen, operatives, and laborers) in total unemployment increased by about 6.5 percentage points and, correspondingly, the shares of all other groups together decreased. Since blue-collar workers constituted only 36 percent of the labor force in 1969 and 34 percent in 1975, the data imply that this occupational group carried a disproportionately heavy burden of the nation's unemployment in both good times and bad. This was particularly true of unskilled laborers, whose share of total unemployment in both years was almost twice as large as their share of the labor force. On the other hand, since white-collar workers (professional, technical and managerial personnel plus sales and clerical workers) comprised 47 percent of the labor force in 1969 and 48 percent in 1975, the data confirm that the incidence of unemployment among this group was relatively small. This was expecially the case for professional, technical, and managerial personnel whose share of total unemployment was only one-third as large as their share of the labor force in both 1969 and 1975.

Table 5 shows the distribution of unemployment and the labor force by age-sex-color groups in 1969 and 1975. The data in Panel A reveal that the relative incidence of unemployment among teenagers was a good deal higher in 1969 than it was in 1975. Although this group's share of the labor force increased from 8.6 percent to 9.5 percent, its share of unemployment fell from 30.1 percent to 22.4 percent. Thus, the ratio of the teenage unemployment share to its labor force share decreased from 3.5 to 2.4. To a much lesser extent, the same thing was true of adult women. On the other hand, the relative burden of unemployment on adult men increased as their share of unemployment rose at the same time their share of the labor force fell.

Panel B shows that the incidence of unemployment among whites was much less than among nonwhites. In both years, whites comprised almost 90 percent of the labor force but only about 80 percent of total unemployment; nonwhites accounted for just over 10 percent of the labor force but about 20 percent of the unemployed. The heaviest burden of all was borne by nonwhite teenagers whose share of unemployment was almost seven times as large as their share of the labor force in 1969 and over four times as large in 1975.

To sum up: If the burden of unemployment was distributed equally, then the distribution of unemployment among demographic or occupational groups would be the same as the labor force distribution among these groups; or, alternatively, the unemployment rate in each group would be the same as the national unemployment rate. The data presented above show that, in good times and bad, this is far from the case. Those with the highest unemployment rates are young people of both sexes, nonwhites of all ages, unskilled blue-collar workers, and persons with little or no previous work experience. By contrast, those with the lowest unemployment rates are white adults of both sexes, especially those employed in professional, technical, or managerial positions.

Table 5
Percent distribution of the unemployed and the labor force, 1969 and 1975

	Unemployment Rate (Percent)	Share of Unemployment (Percent)*	Share of Labor Force (Percent)*	Relative Incidence of Unemployment
		Panel A — *By major age-sex groups*		
1969				
Both sexes, 16-19 years	12.2	30.1	8.6	3.5
Both sexes, 20-24 years	5.7	19.8	12.2	1.6
Females, 25 and over	3.2	25.6	28.3	0.9
Males, 25 and over	1.7	24.4	50.9	0.5
TOTAL	3.5	100.0	100.0	
1975				
Both sexes, 16-19 years	19.9	22.4	9.5	2.4
Both sexes, 20-24 years	13.6	23.4	14.5	1.6
Females, 25 and over	7.0	23.0	29.0	0.8
Males, 25 and over	5.5	30.3	46.9	0.6
TOTAL	8.5	100.0	100.0	
		Panel B — *By major age-color groups*		
1969				
White	3.1	79.9	88.9	0.9
Teenagers	10.7	23.3	7.6	3.1
Adults	2.4	56.5	81.3	0.7
Nonwhite	6.4	20.1	11.1	1.8
Teenagers	24.0	6.8	1.0	6.8
Adults	4.6	13.3	10.1	1.3
TOTAL	3.5	100.0	100.0	
1975				
White	7.8	81.4	88.6	0.9
Teenagers	17.9	18.0	8.5	2.1
Adults	6.7	63.4	80.1	0.8
Nonwhite	13.9	18.6	11.4	1.6
Teenagers	36.9	4.4	1.0	4.4
Adults	11.6	14.2	10.4	1.4
TOTAL	8.5	100.0	100.0	

*Totals may not add to 100 percent due to rounding

Source: U.S. Department of Labor

Policies and Proposals

The total output of goods and services (the gross national product or GNP) is, by definition, equal to the number of workers employed times the output per worker (productivity). If the level of employment increases (the productivity of labor remaining unchanged), GNP increases; if the productivity of labor increases (the level of employment remaining unchanged), GNP increases. If both increase, the increase in GNP is magnified. An increase in productivity, thus, means not only that a larger GNP can be produced by the same number of workers but also that a smaller number of workers can produce the same GNP. With a given labor force, GNP must grow at the same rate as productivity just to keep unemployment from rising. But since the labor force also is growing, GNP must grow at a rate equal to the combined rates of growth of the labor force and labor productivity in order to prevent an increase in unemployment.

In other words, unemployment will increase whenever the growth in GNP is not sufficient to create the jobs needed both to employ new additions to the labor force and to absorb those displaced by increases in labor productivity.

Between 1961 and 1969, output as measured by real GNP (the dollar value of GNP corrected for inflation) increased at an average annual rate of 4.7 percent. Real GNP per worker increased at the rate of 2.4 percent per year, and employment (including the armed forces) grew at an annual rate of 2.3 percent. Since the total labor force increased by less than 1.9 percent per year, the civilian unemployment rate declined from 6.7 percent to 3.5 percent. Between 1969 and 1975, however, the performance of the economy deteriorated. The average annual rate of growth of real GNP was only 2.35 percent, exactly one-half of what it had been during the 1961-1969 expansion. Real GNP per worker increased at the rate of 0.9 percent per year, and total employment grew at an annual rate of 1.45 percent. Since the total labor force increased by more than 2 percent per year, the unemployment rate rose sharply from 3.5 percent to 8.5 percent.

One way to keep unemployment from rising, or to reduce it once it has risen, would be for the government to make sure that there was always an adequate aggregate demand for goods and services. If the expenditures of households and firms and the excess of exports over imports do not generate sufficient demand for goods and services to provide jobs for all those who are willing, able, and seeking to work, then the government can always find some way to take up the slack. Government can increase total demand directly by increasing its own expenditures on goods and services; or, indirectly, by decreasing the taxes it collects and thereby providing firms and households with the means to increase their own spending. Thus it would appear that there is no reason why unemployment cannot be reduced to any level that is desired and then kept there. This, in its extreme form, is the conventional wisdom.

Why, then, doesn't government adopt a full employment policy and systematically carry it out? Are there limits to what government can do? Are there unavoidable and undesirable side-effects of government efforts to manage aggregate demand? Is the conventional wisdom even correct?

What Can Be Done About Unemployment?

Suppose the government permanently increases the level of its expenditures on goods and services. What is likely to happen? To trace out the effects of such a program, assume that before the increase the budget was in balance, and that after the increase both the structure of tax rates and the excess of exports over imports remain unchanged. The initial result of this action is certain to be an increase in the aggregate demand for goods and services: Firms and households have not changed their expenditures, and government has increased its expenditures.

So, total spending in the economy has gone up, and the incomes of the recipients of the extra government expenditures have increased. It is reasonable to expect that this will induce these recipients to increase the level of their own expenditures. However, they will not do so by the full amount of the increase in income because some of the increased income will be siphoned off by additional taxes and some will be saved. Even so, expenditures in the private sector of the economy will rise by some fraction of the initial increase in income. This, in turn, will generate another round of additional income and thus induce another round of additional expenditures—and so on.

Given the fractions of additional income taxed and saved, the larger the initial increase in government expenditures on goods and services, the larger the ultimate increase in income and expenditure in the economy as a whole. For example, if one-fourth of each additional dollar of income received is taxed and 15 percent is saved (one-fifth of after-tax income), then an initial increase of $30 billion in government expenditures would eventually multiply itself by a factor of 2.5 and ultimately result in an increase of $75 billion in income and expenditure in the economy as a whole. This increase in demand for goods and services will cause producers to expand their output. But to do this, they will have to hire more labor. So, employment will go up, and unemployment will go down.

Essentially the same results would be obtained if, instead, the government permanently lowered the schedule of income tax rates but maintained the level of its expenditures on goods and services. Given the fraction of additional income that is saved, there is some reduction in tax rates that will induce firms and households to increase their expenditures by amounts that will eventually cause aggregate income and expenditure to reach the same level as would occur in an increase-in-government-expenditure program. Because there may be different effects on the level and composition of employment and unemployment, as well as on the composition of output and the distribution of income, judgments may differ as to which fiscal action—increased expenditures or tax cuts—is better.

For this discussion, let's assume that the expenditure route is taken. If this were all there were to it, there would be nothing to stop us from achieving and then maintaining full employment. All that would have to be done would be for the government always to program its expenditures on goods and services at a level high enough to ensure that aggregate demand be sufficient to provide jobs for all persons who are able, willing, and seeking to work. Unfortunately, it is not quite that simple. There are several things that can go wrong.

There is, first of all, the matter of financing the deficit in the government's budget that emerges when expenditures are increased and no additional taxes are levied. Of course, as the incomes of firms and households increase, additional income taxes will be collected. But this will provide only a partial offset. It is also true that as employment increases, unemployment insurance benefits and other government transfer payments (negative taxes) will decrease. But this, while serving to reduce the deficit, will also reduce the amount of extra income taxes collected because it will partially offset the expansionary effect of the increased government expenditures. So, the deficit remains.

If the government raises the money by selling additional government securities (debt) to the general public, the effects depend on the state of the securities market. If there happens to exist an "excess" demand for securities (an "excess" supply of cash), then the new issue will absorb this and can be sold with little or no accompanying increase in interest rates. The practical effect is that the increase in government expenditures will not reduce the consumption and investment expenditures of households and firms.

On the other hand, if the general public is not willing to hold additional securities except in return for a higher yield (that is, if the new issue creates an excess supply of securities), then the sale of the new securities will result in higher interest rates. The effect of this will be to reduce private investment (and possibly consumption) expenditures and, to the extent that this occurs, offset the expansionary effects of the increased government expenditures. The latter "crowds out" private expenditures.

How important this effect is really depends on two things: (a) how much interest rates have to increase in order to absorb the new securities issue, and (b) how responsive private expenditures (especially investment expenditures) are to increases in interest rates. It is virtually certain that there will be some effect. To the extent that there is an effect, a given increase in government expenditures will result in smaller gains in employment and smaller reductions in unemployment than would otherwise be the case. In the limiting case, the increase in government expenditures is completely offset by a decrease in private expenditures, and there is no increase in employment or decrease in unemployment.

As pointed out above, this "crowding out" effect would not occur if the timing of the new securities issue happened to coincide with an already existing state of excess demand in the securities market. But this would be a fortuitous event. One way to make it happen, however, would be for the Treasury to offer its new securities not to the general public, but to commercial banks and, if the banks do not have sufficient excess reserves, persuade the Federal Reserve to provide them. The result would be that the banks would buy the securities, and the government would spend the money on goods and services, interest rates would not rise, and private expenditures would not be crowded out. But the money supply would be permanently increased.

Suppose this is the way it is done. What is likely to happen? First of all, the nominal level of national income will rise by some multiple of the increase in government expenditures, although it is not easy to estimate exactly how large this multiplier will be. The real question is: Will the increase in aggregate demand for goods and services—(a) be translated fully into an increase in real output and employment, (b) be completely dissipated by increases in dollar costs and prices, or (c) will it turn out to be some combination of output and price increases?

It is this last outcome, where a decrease in the rate of unemployment is accompanied by an increase in the price level, that is of greatest interest and concern. If we knew that a government-induced increase in demand would result in greater real output, lower unemployment and no increase in prices, we would all be in favor of full employment and the expansionary fiscal and monetary policies undertaken to achieve it. Abstracting from any redistribution of income and output that may accompany this, everybody would gain and nobody would lose.

Similarly, if we were certain that the increase in demand would merely cause wages and prices to rise without any increase in real output or reduction in unemployment, we would all oppose such policies. Nobody would gain and everybody would lose—again abstracting from the redistributional effects. The problem is that we simply cannot be sure how an increase in nominal GNP will be divided between an increase in real output and an increase in the level of prices.

From our experience, however, we are fairly sure that when unemployment is very high and there is a lot of plant and equipment standing around idle, aggregate demand can be increased with little risk of triggering an increase in prices and with a good chance that real output and employment will rise. We are also fairly certain that when unemployment is very low and the existing capital stock is almost fully utilized, an increase in aggregate demand carries with it a very substantial risk of increasing prices with little or no possibility for real output and employment to rise.

This suggests that fiscal-monetary policies aimed at raising the level of aggregate demand ought to be accompanied by policies to increase the level of aggregate supply. These measures might include efforts to increase the productivity of resources, decisions to reduce excise and payroll taxes and to lower tariffs and import quotas, and actions to improve the efficiency of labor markets and to increase competition in product markets. The overall effects of such programs would be to reduce costs per unit of output and thus decrease the supply prices of goods and services, thereby increasing the quantities supplied to the market at each price level.

An increase in aggregate supply would mean that an increase in aggregate demand would be more likely to result in an increase in real output and employment and less likely to lead to an advance in the level of prices. In other words, policies undertaken to improve the supply side of the market would complement and reinforce those carried out on the demand side. The practical result would be that a program to reduce unemployment would have a much better chance of success because the likelihood of its being thwarted by inflation, or the fear of inflation, would be diminished.

However, it is not easy to increase aggregate supply, and the task is made more difficult by the fact that the growth in labor productivity has slowed down considerably in the past decade. Output per hour worked in the private business economy increased at an average annual rate of 3.3 percent between 1948 and 1966, but since then it has been growing at an average

rate of less than 2 percent per year. Similarly, the annual growth rate of real GNP per worker was 2.4 percent between 1948 and 1966 and only about 1.0 percent since then. Part of the reason for this slowdown was the recent recession. But only part, since the trend was evident well before the end of 1973. The larger part of this poor performance has to be attributed to other factors: the decline in the rate of growth of capital per worker (meaning that the labor force has increased faster than the capital stock), the steady increase in the percentage of less experienced workers in the labor force, the slowing down of the movement of workers from agriculture to the nonfarm sector of the economy and the faster rate of growth of employment in the service industries, and perhaps a slower rate of technological progress.

Some of these trends are reversible, but others are not. The capital-labor ratio in the private sector increased by 3.1 percent per year between 1948 and 1966, but since then it has been growing at an average annual rate of only 2.4 percent. Given the rate of growth of the labor force, the growth rate of capital per worker can be raised only by a substantial increase in the percentage of GNP that is devoted to investment in new plant and equipment. To accomplish this requires, at the very least, not only strong markets for final output but an increase in the expected after-tax rate of return on capital relative to the rate of interest. This, in turn, requires measures to restore business confidence and reduce uncertainty, as well as a substantial reduction in corporate income taxes. Unless the growth rate of capital per worker can be improved, there is very little likelihood that the rate of productivity growth can be substantially increased.

The proportion of less experienced workers in the labor force will gradually be reduced through the passage of time because the median age of the work force is increasing. Meanwhile, increased levels of public service employment and government-sponsored training programs for young and other unskilled unemployed persons can be of assistance in the acquistion of the skills, work habits, and job-related experience necessary for successful employment in the private sector. In addition, increased levels of employer-sponsored on-the-job training programs would be encouraged by the adoption of a lower federal minimum wage for youths and the granting of tax credits (or some other subsidy) for those who provide employment for young and other inexperienced persons.

The rate of out-migration of workers from the agricultural sector has declined principally because the number of workers remaining on the farm is now very low. Between the late 1940s and the mid-1960s, agricutural employment declined rapidly from over 7.5 million to about 4 million, or from more than 13 percent of total employment to 5 percent. Since then, the number of farm workers has decreased to less than 3.3 million, and the fraction of farm workers in the total work force has dropped below 4 percent. So, it is not reasonable to count on raising overall productivity growth by further transfers of workers from farm to nonfarm activities. Similarly, within the nonfarm sector, it seems reasonable to expect a continued shift of employment from the high productivity goods sector to the low productivity service sector.

As far as speeding up the rate of technological progress is concerned, about the only steps that might be taken are policies to reverse the decade-long decline in the share of research and development expenditures in GNP in the hope that this will ultimately pay off in a faster rate of productivity growth. Although the connection between current research and future productivity growth seems logical, the empirical relation is not well documented. So, it is difficult to be sure what the quantitative effects of an increase in research and development expenditures would be.

From this discussion, it is apparent that a substantial increase in the average annual rate of productivity growth will be very hard to achieve. The best chance probably lies in avoiding severe recessions and in reversing the declining growth rate of the capital-labor ratio. Even so, labor costs per unit of output will not fall if money wage rates increase faster than the growth in output per worker-hour. Thus, the ability to increase aggregate supply depends not only on what happens to productivity growth but also on the behavior of money wage rates.

It is this latter consideration that prompts some people to advocate the adoption of an incomes policy—that is, a set of measures that not only limits money wage increases to the economy-wide average annual rate of productivity growth but also precludes profit margins (percentage markups on unit labor costs) from changing. If successfully carried out—and no one argues that it really can be—the practical result of the policy in the short run would be to keep the price level stable as output and employment increase. Over the longer run, it is likely the misallocations of resources would increasingly occur, and thus productivity growth would lag as a consequence of freezing wage differentials and relative income shares at arbitrary levels. So, even apart from its feasibility, there is some question about the desirability of implementing an incomes policy.

This leaves us with adopting such once-and-for-all measures as reductions in excise and payroll taxes, in import tariffs and quotas, and in the degree of monopoly in labor and product markets. Each of these actions would have the effect of decreasing the supply prices of goods and services, either directly or indirectly by reducing costs per unit of output. Thus, they would increase the quantities of goods and services supplied at each price level. Yet, each such measure could be undertaken only once and the effects could not be repeated. A reduction in excise taxes, for example, would reduce the supply prices of the commodities affected. But once the tax was completely eliminated, no further reduction in supply price would be possible. This is not to say that such actions should not be undertaken; only that we should not rely on them as sources of continuing reductions in the supply prices of goods and services.

If we are to succeed in reducing unemployment to more acceptable levels without inducing an unacceptable rate of inflation, it is necessary that aggregate demand management be carried out within the constraints imposed by the behavior of the determinants of aggregate supply. Another way of saying this is: If we are not prepared to tolerate inflation above a certain rate, then we must be prepared to accept an unemployment target whose level is determined by the prevailing conditions of aggregate supply.

What is the Full-Employment Unemployment Rate?

The full-employment unemployment rate cannot be determined with any great precision. One thing is certain: it cannot be zero or even close to zero. A zero unemployment rate would mean that no one ever entered or re-entered the labor force and no one ever quit his job or was laid off; that for new entrants or re-entrants and voluntary quits or involuntary separations, the process of searching for a job consumed no time. Nor can full employment be defined by an equality between the number of unemployed persons and the number of unfilled jobs. Not only might there be mismatches between the qualifications of workers and the specifications of jobs, but even if there were not, an equality between the number of unemployed and the number of vacancies might be characteristic of many unemployment rates. By that definition, almost any unemployment rate could be consistent with "full employment."

The customary definition of the full-employment unemployment rate and the one with the widest acceptance is: the lowest rate of unemployment that can be attained without resulting in an accelerated rate of inflation, given the existing economic conditions. The difficulty is that no one can be sure exactly what unemployment rate is implied by this definition. It is not possible to predict with any great degree of certainty how much of a change in the rate of inflation will be associated with any given change in the unemployment rate.

In the early 1960s, President Kennedy's Council of Economic Advisers (CEA) determined that 4 percent was the best estimate of the full-employment unemployment rate. That rate was based on experience during the period from mid-1955 to mid-1957—when the unemployment rate fluctuated around an average of 4.1 percent and the consumer price index advanced at an average rate of 2.5 percent per year. The CEA was careful to state that this was only an interim goal of stabilization policy. By interim they meant two things: It was a target that could be reached, under the economic conditions existing at the time, by an expansion of aggregate demand; and it was a goal that could be exceeded if appropriate measures to increase aggregate supply were undertaken.

Since the former could be carried out immediately and the latter would take time, they set their sights on the 4 percent figure.

As we have seen, the unemployment rate did get below 4 percent in the late 1960s; it averaged less than 3.7 percent during the period from 1966 to 1969. At the same time, however, the rate of inflation (as measured by changes in the consumer price index) began to accelerate, increasing from under 2 percent in 1965 to over 6 percent in 1969. Although a 4 percent unemployment rate may have been consistent with an acceptably low rate of inflation in the mid-1950s, it would appear that by the late 1960s this proposition had become increasingly doubtful. In any case, our experience thus far in the 1970s has been such that those who accept the customary definition of the full-employment unemployment rate now consider 5 percent, or even 5.5 percent, as the best we can do under the existing circumstances.

The principal reason for this upward adjustment is, as we have seen, the changed composition of the labor force. If we take the age-sex specific unemployment rates that existed in 1956 (when the overall unemployment rate was 4.1 percent) and weight them by the age-sex specific shares of the labor force that prevail currently, the overall unemployment rate becomes 5 percent. That is to say, the full-employment unemployment rate equivalent to 4 percent two decades ago has increased simply because the labor force now is composed of relatively more workers (teenagers and young adults) with relatively higher turnover rates. Unless offset by a more efficient job search process that reduces the average length of time it takes to find a job, a higher labor force turnover rate (whether due to increased entrant and reentrant rates or to increased quit and layoff rates) means a higher unemployment rate.

Other developments also may have increased the full-employment unemployment rates of all age-sex groups. The most important of these has probably been the extension of unemployment insurance to previously uncovered groups of workers and the lengthening of the period during which unemployed workers can collect benefits. To the extent that these changes have increased quit and layoff rates or have increased the average length of time unemployed persons spend looking for work, the full-employment unemployment rate has risen. Taking account of these and other changes in the past 20 years, President Ford's Council of Economic Advisers in January, 1977, estimated the full-employment unemployment rate to be no lower than 4.9 percent and perhaps as high as 5.5 percent.

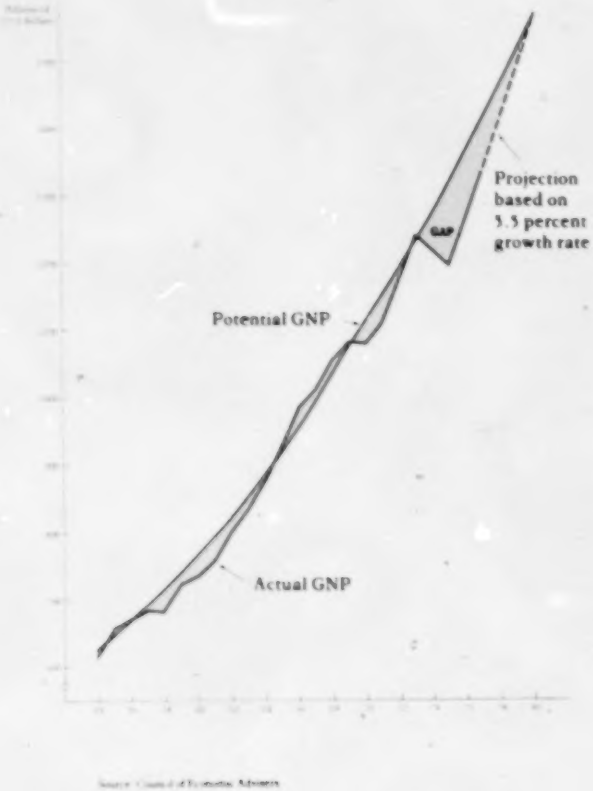
How Long Will It Take to Get the Unemployment Rate Down to 5 Percent?

The unemployment rate fell from 8.5 percent in 1975 to 7 percent in 1977. At the same time, the real GNP increased by 11.3 percent, or at an average annual rate of 5.5 percent. There is a connection between the two. The relatively rapid growth of real GNP was more than sufficient to absorb the increase in the labor force and offset the effects of increased productivity. In this two-year period, real GNP per worker rose by 4.4 percent, and employment increased by 6.6 percent. So, even though the labor force grew by 5 percent, the unemployment rate decreased. If the 1975-1977 performance could be maintained, the unemployment rate would reach the 5 percent level by the end of next year.

The general relationship between the growth of real output and the unemployment rate may be stated as follows: When actual GNP grows faster than potential GNP, the unemployment rate declines; conversely, when actual GNP grows more slowly than potential GNP, the unemployment rate rises. Potential GNP is a measure of the aggregate supply capability of the economy—that is, the amount of output that could be produced with the existing technology and high-but-sustainable utilization of existing resources. Under conditions of abnormally high aggregate demand (for example, during wartime) it can be exceeded for short periods of time. More frequently, however, the level of aggregate demand has proved insufficient to exhaust our potential to produce goods and services, and the result has been unemployment and idle capacity.

Potential GNP grows every year. The average rate at which it grows is best approximated by adding (a) the average annual rate of increase of the labor force to (b) the trend rate of growth of output per labor hour, and then sub-

Figure 5:
Actual and Potential GNP, 1954 - 1977
(with projections to 1980)



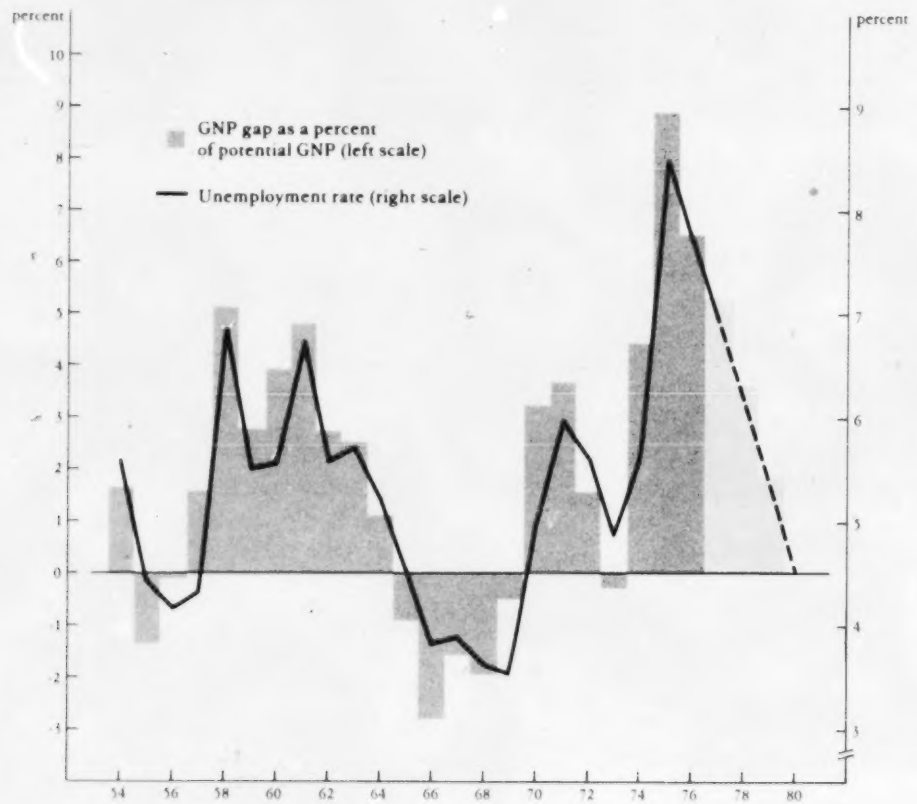
tracting (c) a correction for the secular (industry-wide trends) decline in average hours of work. Before President Ford left office, his Council of Economic Advisers estimated the potential GNP growth rate during the 1970s to be about 3.5 percent per year. This was the result of adding an estimated 1.8 percent productivity growth to the 2.0 percent growth in the labor force and then subtracting 0.3 percent for the annual decrease in average hours worked. It means that actual GNP must grow at an average rate of 3.5 percent per year just to keep the unemployment rate from rising.

The relationship between potential and actual GNP since the mid-1950s is shown in Figure 5. The growth of potential output has not been constant. It is estimated to have been 3.5 percent per year between 1954 and 1962, 3.75 percent per year from 1963 to 1965, 4.0 percent per year from 1966 to 1969, and 3.5 percent per year since 1970. The difference between potential and actual GNP, called the GNP gap, is a measure of the output lost through the failure to maintain full employment. The relationship between the GNP gap (measured as a percent of potential GNP) and the unemployment rate is fairly close and has been quite stable. This is shown in Figure 6.

Analysis of these data suggests that the unemployment rate increases/decreases by one percentage point for every increase/decrease of approximately 2.5 percentage points in the GNP gap (measured as a percent of potential GNP). In 1977, the gap was on the order of $75 billion (1972 dollars), or between 5 and 5.5 percent of potential GNP. If in the next several years actual GNP increases substantially faster than potential GNP, eventually catching up with it and eliminating the gap, the unemployment rate should decline from its 1977 level of 7 percent to the neighborhood of 4.5 percent. The arithmetic of this implies that, in order to close the gap by 1980, actual GNP will have to continue to grow at an average rate of about 5.5 percent per year between now and then. A slower rate of growth will lengthen the time it takes to retain full employment, and a faster rate will shorten it.

These calculations suggest that the full-employment unemployment rate is about 4.5 percent, and this is somewhat below the 4.9 to 5.5 percent range that was discussed earlier. Both estimates are based on the work of the Council of Economic Advisers. The difference between them is this: The 4.5 percent figure is an estimate that is consistent with a zero GNP gap and is derived from the historical relationship between the gap and the unemployment rate; the 4.9 to 5.5 percent range is an estimate of the lowest unemployment rate that is attainable, under current and foreseeable economic conditions, without an acceleration of the rate of inflation. It would be ideal if these two estimates coincided because that would suggest that the

Figure 6:
The unemployment rate
and the GNP gap, 1954 - 1977
(with projections to 1980)



Source: Council of Economic Advisers

economy could move up to its full potential without an increase in its inflation rate. But they do not agree, and the only sure way to tell which, if either, of these estimates is correct is to start the unemployment rate going down and find out.

It will not be easy to realize a sustained annual growth of real output of 5.5 percent for the next three years. With the labor force growing at the rate of 2 percent per year, employment will have to increase at an average annual rate of 2.9 percent (or over 2.75 million new jobs each year) in order to reduce the unemployment rate to 4.5 percent by 1980. This means the real GNP per worker will have to increase at an average annual rate of almost 2.6 percent. As Table 6 shows, these numbers are all higher than those achieved during the past 20 years or so. For example, between 1961 and 1969 when unemployment fell from 6.7 to 3.5 percent, real

Table 6
Growth rate of real GNP, employment and real GNP per worker

	Actual				Required
	1954-57	1957-61	1961-69	1969-77	1977-80
	(Percent per year)				
Real GNP	3.4	2.9	4.7	2.7	5.5
Employment	1.8	0.8	2.3	1.6	2.9
Real GNP per worker	1.6	2.1	2.4	1.1	2.6

Source: Council of Economic Advisers

GNP increased at an average annual rate of 4.7 percent; employment rose at an average rate of 2.3 percent per year (or over 1.6 million new jobs each year); and real GNP per worker increased at an average annual rate of 2.4 percent. At the same time, the consumer price index advanced at an average rate of under 2.5 percent per year. To exceed the performance of the 1960s will almost surely require a substantial rise in the rate of growth of capital per worker. This, in turn, means a larger fraction of real GNP saved and invested in new plant and equipment. The implication is that fiscal-monetary policy makers must keep the means in sight while aiming at the goal.

Appendix

Supporting Data: Figures 1-6

Data for Figure 1
(National Unemployment Rate — 1948 - 1976)

1948-I	3.7	1956-I	4.1	1964-I	5.5	1972-I	5.9
II	3.7	II	4.2	II	5.2	II	5.7
III	3.8	III	4.1	III	5.0	III	5.6
IV	3.8	IV	4.2	IV	5.0	IV	5.3
1949-I	4.7	1957-I	4.0	1965-I	4.9	1973-I	5.0
II	5.9	II	4.1	II	4.7	II	4.9
III	6.1	III	4.2	III	4.4	III	4.7
IV	7.0	IV	5.0	IV	4.1	IV	4.7
1950-I	6.4	1958-I	6.3	1966-I	3.9	1974-I	5.2
II	5.6	II	7.4	II	3.8	II	5.2
III	4.6	III	7.4	III	3.8	III	5.5
IV	4.2	IV	6.4	IV	3.7	IV	6.6
1951-I	3.5	1959-I	5.9	1967-I	3.8	1975-I	8.4
II	3.1	II	5.1	II	3.8	II	8.9
III	3.2	III	5.2	III	3.8	III	8.4
IV	3.4	IV	5.6	IV	3.9	IV	8.4
1952-I	3.1	1960-I	5.1	1968-I	3.8	1976-I	7.6
II	3.0	II	5.2	II	3.6	II	7.5
III	3.3	III	5.5	III	3.5	III	7.8
IV	2.9	IV	6.3	IV	3.4	IV	7.9
1953-I	2.7	1961-I	6.8	1969-I	3.4	1977-I	7.4
II	2.6	II	7.0	II	3.4	II	7.1
III	2.8	III	6.8	III	3.6	III	6.9
IV	3.7	IV	6.2	IV	3.6	IV	6.6
1954-I	5.3	1962-I	5.7	1970-I	4.2		
II	5.8	II	5.5	II	4.8		
III	6.0	III	5.6	III	5.2		
IV	5.3	IV	5.5	IV	5.8		
1955-I	4.9	1963-I	5.8	1971-I	6.0		
II	4.4	II	5.7	II	5.9		
III	4.1	III	5.5	III	6.0		
IV	4.3	IV	5.6	IV	6.0		

Source: U.S. Department of Labor

Data for Figure 2
(Labor Market Variables — 1949 - 1975)

Year	Employment Rate	Labor Force Participation Rate	Employment-Population Ratio
1949	94.1	58.0	54.6
1950	94.7	58.3	55.2
1951	96.7	57.6	55.7
1952	97.0	57.1	55.4
1953	97.1	57.0	55.3
1954	94.5	57.0	53.8
1955	95.6	57.7	55.2
1956	95.9	58.5	56.1
1957	95.7	58.2	55.7
1958	93.2	58.1	54.2
1959	94.3	58.0	54.8
1960	94.5	58.1	54.9
1961	93.3	58.1	54.2
1962	94.5	57.4	54.2
1963	94.3	57.4	54.1
1964	94.8	57.5	54.5
1965	95.5	57.6	55.0
1966	96.2	57.8	55.6
1967	96.2	58.0	55.8
1968	96.4	58.1	56.0
1969	96.5	58.6	56.5
1970	95.1	59.0	56.1
1971	94.1	59.0	55.5
1972	94.4	59.4	56.0
1973	95.1	59.8	56.9
1974	94.4	60.3	57.0
1975	91.5	60.4	55.3

Source: U.S. Department of Labor

Data for Figure 3
(Selected Unemployment Rates — 1949 - 1975)

	Both Sexes, 16 to 19 years	Both Sexes, 20 to 24 years	Females, 25 years and over	Males, 25 years and over
1949	13.4	9.3	4.9	4.8
1950	12.2	7.7	4.8	4.2
1951	8.2	4.1	3.9	2.4
1952	8.5	4.6	3.0	2.2
1953	7.6	4.7	2.7	2.5
1954	12.6	9.2	5.3	4.4
1955	11.0	7.0	4.1	3.4
1956	11.1	6.6	3.9	3.1
1957	11.6	7.1	3.9	3.2
1958	15.9	11.2	5.7	5.6
1959	14.6	8.5	4.8	4.3
1960	14.7	8.7	4.6	4.3
1961	16.8	10.4	5.8	5.2
1962	14.6	9.0	4.8	4.1
1963	17.2	8.8	4.9	4.0
1964	16.2	8.3	4.6	3.6
1965	14.8	6.75	4.0	2.8
1966	12.75	5.3	3.5	2.25
1967	12.8	5.7	3.7	2.0
1968	12.7	5.8	3.2	1.8
1969	12.2	5.7	3.2	1.7
1970	15.25	8.2	4.1	2.8
1971	16.9	9.9	4.9	3.5
1972	16.2	9.3	4.6	3.1
1973	14.5	7.0	4.0	2.5
1974	16.0	9.0	4.6	3.0
1975	19.9	13.6	7.0	5.5

Source: U.S. Department of Labor

Data for Figure 4
(Ratios of Selected Unemployment Rates to the National Unemployment Rate — 1949 - 1975)

	Both Sexes, 16 to 19 years	Both Sexes, 20 to 24 years	Females, 25 years and over	Males 25 years and over
1949	2.26	1.56	0.82	0.80
1950	2.30	1.45	0.90	0.80
1951	2.47	1.25	1.18	0.72
1952	2.80	1.51	0.98	0.73
1953	2.62	1.60	0.91	0.78
1954	2.27	1.66	0.95	0.80
1955	2.50	1.59	0.94	0.78
1956	2.70	1.61	0.95	0.74
1957	2.72	1.66	0.91	0.75
1958	2.34	1.64	0.84	0.82
1959	2.66	1.55	0.88	0.78
1960	2.66	1.57	0.84	0.78
1961	2.51	1.55	0.87	0.78
1962	2.64	1.62	0.87	0.75
1963	3.04	1.56	0.86	0.70
1964	3.12	1.60	0.89	0.70
1965	3.27	1.49	0.88	0.62
1966	3.36	1.40	0.88	0.59
1967	3.34	1.48	0.97	0.53
1968	3.54	1.63	0.89	0.50
1969	3.49	1.62	0.91	0.48
1970	3.09	1.65	0.83	0.56
1971	2.84	1.68	0.83	0.59
1972	2.90	1.66	0.82	0.56
1973	2.99	1.60	0.83	0.52
1974	2.87	1.62	0.82	0.54
1975	2.36	1.61	0.83	0.64

Source: U.S. Department of Labor

Data for Figure 5

Year	Potential GNP	Actual GNP
1954	623.7	613.7
1955	645.6	654.8
1956	668.2	668.8
1957	691.6	680.9
1958	715.8	679.5
1959	740.8	720.4
1960	766.7	736.8
1961	793.6	755.3
1962	821.3	799.1
1963	852.1	830.7
1964	884.1	874.4
1965	917.3	925.9
1966	953.9	981.0
1967	992.1	1,007.7
1968	1,031.8	1,051.8
1969	1,073.1	1,078.8
1970	1,110.6	1,075.3
1971	1,149.5	1,107.5
1972	1,189.7	1,171.1
1973	1,231.4	1,235.0
1974	1,274.5	1,217.8
1975	1,319.1	1,202.1
1976	1,365.2	1,274.7
1977P	1,413.0	1,337.7
1978*	1,462.5	1,410.0
1979*	1,513.7	1,486.2
1980*	1,566.6	1,566.6

Data for Figure 6

Year	Gap as a Percent of Potential	Unemployment Rate
1954	1.6	5.5
1955	-1.4	4.4
1956	-0.1	4.1
1957	1.6	4.3
1958	5.1	6.8
1959	2.8	5.5
1960	3.9	5.5
1961	4.8	6.7
1962	2.7	5.5
1963	2.5	5.7
1964	1.1	5.2
1965	-0.9	4.5
1966	-2.8	3.8
1967	-1.6	3.8
1968	-1.9	3.6
1969	-0.5	3.5
1970	3.2	4.9
1971	3.6	5.9
1972	1.6	5.6
1973	-0.3	4.9
1974	4.4	5.6
1975	8.9	8.5
1976	6.6	7.7
1977P	5.3	7.0
1978*	3.6	6.2
1979*	1.8	5.3
1980*	0.0	4.5

P Preliminary * Projected

Source: Council of Economic Advisers

Bibliography

American Assembly. *Jobs for Americans*. Ed. by Eli Ginzberg. New York: Prentice-Hall (1976).

Bowen, William G. and Orley Ashenfelter, ed. *Labor and the National Economy*. New York: W. W. Norton & Co., revised edition (1975).

Bregger, John E. "Unemployment Statistics and What They Mean." *Monthly Labor Review* (November 1971).

Committee for Economic Development. *The Economy in 1977-78: Strategy for an Enduring Expansion*. New York: CED (December 1976).

Congressional Budget Office, Congress of the United States. *Temporary Measures to Stimulate Employment: An Evaluation of Some Alternatives*. Washington: Government Printing Office (September 1975).

_____. *The Unemployment of Nonwhite Americans: The Effects of Alternative Policies*. Background Paper No. 11. Washington: Government Printing Office (July 1976).

_____. *Sustaining a Balanced Expansion*. Washington: Government Printing Office (August 1976).

_____. *Policy Options for the Teenage Unemployment Problem*. Background Paper No. 13. Washington: Government Printing Office (September 1976).

_____. *The Teenage Unemployment Problem: What Are the Options?* Report of CBO Conference. Washington: Government Printing Office (October 1976).

Council of Economic Advisers. *Economic Report of the President* presented to Congress (January 1977). Washington: Government Printing Office (1977).

Feldstein, Martin S. "The Importance of Temporary Layoffs: An Empirical Analysis." In *Brookings Papers on Economic Activity*, ed. by A. M. Okun and G. L. Perry. Washington: The Brookings Institution, 3:1975:725-744.

Hall, Robert E. "Why Is the Unemployment Rate So High at Full Employment?" In *Brookings Papers on Economic Activity*, ed. by A. M. Okun and G. L. Perry. Washington: The Brookings Institution, 3:1970:369-402.

_____. "Turnover in the Labor Force." In *Brookings Papers on Economic Activity*, ed. by A. M. Okun and G. L. Perry. Washington: The Brookings Institution, 3:1972:709-756.

_____. "The Rigidity of Wages and the Persistence of Unemployment." In *Brookings Papers on Economic Activity*, ed. by A. M. Okun and G. L. Perry. Washington: The Brookings Institution, 2:1975:301-335.

Joint Economic Committee, Congress of the United States. *Lowering the Permanent Rate of Unemployment*. Study prepared by Martin S. Feldstein. Washington: Government Printing Office (September 1973).

_____. *U. S. Economic Growth from 1976 to 1986: Prospects, Problems, and Patterns* Vol. 1, Productivity. Studies prepared by John W. Kendrick and Edward F. Renshaw. Washington: Government Printing Office (October 1976).

_____. *Achieving the Goals of the Employment Act of 1946—Thirtieth Anniversary Review* Vol. 1, Employment. Paper No. 6, "The Impact of Macroeconomic Conditions on Employment Opportunities for Women." Study prepared by Ralph E. Smith. Washington: Government Printing Office (January 1977).

Lebergott, Stanley, ed. *Men Without Work: The Economics of Unemployment*. Englewood Cliffs, N. J.: Prentice-Hall (1964).

National Commission for Manpower Policy. *Toward a National Manpower Policy*. First Annual Report to the President and Congress. Washington: (October 1975).

_____. *Demographic Trends and Full Employment*. Special Report No. 12. Washington: (December 1976).

Okun, Arthur M., ed. *The Battle Against Unemployment*. New York: W. W. Norton & Co., revised edition (1972).

Perry, George L. "Changing Labor Markets and Inflation." In *Brookings Papers on Economic Activity*, ed. by A. M. Okun and G. L. Perry. Washington: The Brookings Institution, 3:1970:411-441.

_____. "Unemployment Flows in the U. S. Labor Market." In *Brookings Papers on Economic Activity*, ed. by A. M. Okun and G. L. Perry. Washington: The Brookings Institution, 2:1972:245-278.

President's Committee to Appraise Employment and Unemployment Statistics. *Measuring Employment and Unemployment*. Washington: Government Printing Office (1962).

Raskin, A. H. "Jobless Rate: Is It an Outmoded Index?" *The New York Times* (August 27, 1976).

_____. "An Overhaul of Unemployment Statistics." *The New York Times* (November 29, 1976).

Shiskin, Julius. "Employment and Unemployment: The Doughnut or the Hole?" *Monthly Labor Review* (February 1976).

Shiskin, Julius and Robert L. Stein. "Problems in Measuring Unemployment." *Monthly Labor Review* (August 1975).

Stein, Robert L. "New Definitions for Employment and Unemployment." *Employment and Earnings and Monthly Report on the Labor Force* (February 1967).

Tella, Alfred J. "Analyzing Joblessness." *The New York Times* (October 27, 1976).

Thompson, Marvin M. and Gary Shapiro. "The Current Population Survey: An Overview." *Annals of Economic and Social Measurement* (April 1973).

U. S. Department of Labor, Bureau of Labor Statistics. *How the Government Measures Unemployment*. BLS Report No. 312. Washington: Government Printing Office (June 1967).

_____. *Work Experience of the Population in 1975*. Special Labor Force Report 192. Washington: Government Printing Office (1976).

_____. "The U. S. Labor Force in 1990: New Projections." News release. Washington: (September 15, 1976).

_____. "How the Government Measures Unemployment." Report 505. Washington: Government Printing Office (1977).

U. S. Department of Labor. *Employment and Training Report of the President*. Washington: Government Printing Office (1976).